

IN THE CLAIMS : (entire set of claims)

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1. A method for performing wireless link adaptation in a retransmission environment comprising the steps of:
    - (a) determining a threshold value corresponding to each of at least one link adaptation modes using a retransmission model;
    - (b) measuring a signal quality value at a receiver;
    - (c) selecting a best link adaptation mode by comparing the signal quality value to the threshold value corresponding to each of the at least one link adaptation modes; and
    - (d) adjusting at least one of a modulation scheme and a coding scheme based upon the best link adaptation mode.
  2. (Currently Amended) The method according to claim 1, wherein the step of determining a threshold value corresponding to each of at least one link adaptation modes further includes the steps of for each adaptation mode, determining a corresponding throughput function using at least a radio interference rate value and a block error rate value.
  3. The method according to claim 2, wherein the block error rate value is a function of a SIR variable for the retransmission environment and further including the step of for each link adaptation mode, determining a corresponding range of SIR values for which a corresponding throughput function has a maximum value among the throughput functions corresponding to each of the at least one link adaptation modes.
  - 4 The method according to claim 1, further including the step of if the signal quality value is less than a no-transmission threshold value, ceasing transmission until the signal quality value exceeds the no-transmission threshold value.
  5. The method according to claim 1, wherein the signal quality value is one of a signal to interference ratio (SIR) and a block error rate (BLER).
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6. The method according to claim 1, wherein each of the at least one link adaptation modes is a link adaptation mode supported by the Enhanced Data Rates for <sup>GSM</sup>~~OSM~~ Evolution (EDGE) specification.
7. The method according to claim 1, wherein the retransmission environment is modeled using a wireless transmission model that includes at least one retransmission.
8. A method for performing wireless transmissions comprising the steps of:
- (a) measuring a signal quality value at a receiver;
  - (b) determining whether the signal quality value is less than a no-transmission threshold, which threshold corresponds to lowest signal quality value that equals a diminution in signal quality due to retransmission plus signal quality assuming no retransmissions;
  - (c) if the signal quality value is less than the no-transmission threshold, ceasing transmission; and
  - (d) if the signal quality value exceeds the no-transmission threshold, performing link adaptation.
9. The method according to claim 8, wherein the no-transmission threshold is a SIR value below which a wireless transmission system is unstable.
10. The method according to claim 8, wherein the no-transmission threshold is a SIR value below which substantially zero throughput will occur at a link receiver.
11. The method according to claim 8, wherein the signal quality value is one of a SIR and a BLER.
12. The method according to claim 8, wherein the step of performing link adaptation further includes the steps of:
- (a) selecting a best link adaptation mode by comparing the signal quality value to a threshold value corresponding to each of at least one link adaptation

modes; and

- (b) adjusting at least one of a modulation scheme and a coding scheme based upon the best link adaptation mode.

13. A method for calculating a threshold value for each of at least one link adaptation modes in a retransmission environment comprising the steps of

- (a) for each of the at least one link adaptation modes, calculating a performance criteria function using at least one parameter;
- (b) for each of the at least one link adaptation modes, determining a range of signal quality values for which the performance criteria function is maximized.

14. The method according to claim 13, wherein the performance criteria function is a throughput function that is dependent upon at least one of a radio interference rate value and a block error rate value.

15. The method according to claim 13, wherein the signal quality value is one of a SIR and a BLER.

16. A wireless communication system comprising:

at least one wireless receiver, wherein each of the at least one wireless receiver further includes:

- a transceiver;
- an antenna;

at least one wireless transmitter, wherein each of the at least one wireless transmitter further includes:

- a transceiver;
- an antenna;

a processor, wherein the processor is adapted to:

- (a) determine whether a signal quality value for a current receiver is less than a no-transmission threshold, which threshold corresponds to

lowest signal quality value that equals a diminution in signal quality due to retransmission plus signal quality assuming no retransmissions;

- (b) if the signal quality value is less than the no-transmission threshold, cease transmission to the current receiver; and
- (c) if the signal quality value exceeds the no-transmission threshold, perform link adaptation.

17. The wireless communications system according to claim 16, wherein the processor is further adapted to:

- (a) select a best link adaptation mode by comparing the signal quality value to a threshold value corresponding to each of at least one link adaptation modes; and
- (b) adjust at least one of a modulation scheme and a coding scheme based upon the best link adaptation mode.

18. A method for performing wireless link adaptation in a retransmission environment comprising the steps of:

- (b) measuring a signal quality value at a receiver;
- (c) selecting a chosen mode by comparing said signal quality value to threshold values corresponding to different transmission modes, which threshold values result from a computation that accounts for increases in signal to interference ratio (SIR) resulting from retransmission; and
- (d) effecting said adaptation by causing transmission at said chosen mode.

19. (Currently Amended) A wireless communication system comprising:

at least one wireless receiver, wherein each of the at least one wireless receiver further includes:

a transceiver;  
an antenna;

at least one wireless transmitter, wherein each of the at least one wireless transmitter further includes:

a transceiver;

an antenna;

a processor, wherein the processor is adapted to:

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- (a) determine whether a signal quality value for a current receiver is less than a no-transmission threshold;
  - (b) if the signal quality value is less than the no-transmission threshold, cease transmission to the current receiver; and
  - (c) if the signal quality value exceeds the no-transmission threshold, perform link adaptation in accordance with an algorithm that takes into account diminution in signal to interference ratio due to retransmissions.
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